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10/634,931	08/05/2003	Wayne A. Soehren	P02,0499 (H0002385)	3825

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HONEYWELL INTERNATIONAL INC.
Law Dept. AB2
P.O. Box 2245
Morristown, NJ 07962-9806

EXAMINER	
HOEKSTRA, JEFFREY GERBEN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/634,931
Filing Date: August 05, 2003
Appellant(s): SOEHREN ET AL.

Wayne A. Soehren
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 09/12/2006 appealing from the Office action mailed 03/07/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The amendment after final rejection filed on 05/15/2006 has not been entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

NEW GROUND(S) OF REJECTION

Claims 4-6, 9, and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Root et al. (US 6,013,007).

Claims 1-3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Root et al. in view of Foxlin et al. (US 6,162,191).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Root et al. in view of Vock et al. (US 6,885,971 B2).

Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Root et al. in view of Foxlin et al. in further view of Vock et al.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Root et al. in view of Foxlin et al. in view of Vock et al. and in further view of Teller et al.

Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Root et al. in view of Teller et al.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,013,007	Root	1-2000
6,162,191	Foxlin	12-2000
6,885,971	Vock	4-2005
2002/0019586	Teller	2-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Previous Ground(s) of Rejection – 35 USC § 102

1. Claims 4, 5, 6, 9, 15, 16, & 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Root et al US Patent No. 6,013,007.

2. Regarding claims 4, 5, 6, & 9 Root et al. discloses a personal status sensor (611/612) that includes a heart rate sensor (611); motion sensors (301/604) for

mounting on a human; a motion classification unit (602) to receive data from motion sensor, an output unit (605); energy estimator unit (Figure 11– calories burned); health monitor unit (Figure 11 – heart rate); alarm upon traversal of a health threshold (Column 2, lines 17 – 25); and a filter (Column 7, lines 52 - 56).

3. Regarding claims 15, 16, & 17, Root et al. discloses a method for monitoring human motion comprising of sensing motion (Abstract) and metabolism rate (Figure 11 – calories burned) of a human, classifying the motion (Column 8, lines 5 – 10), estimating energy expended (Column 7, lines 45 – 47), triggering an alarm if a health threshold is traversed (Column 2, lines 17 – 25) and providing landmarking position (Abstract).

Previous Ground(s) of Rejection - 35 USC § 103

4. Claims 1, 2, 3 & 7 rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,013,007 to Root et al. in view of US Patent No. 6,162,191 by Foxlin et al.

5. In regards to claims 1 & 2 Root et al. discloses a human motion and classification system; sensors for sensing a human (611/612/610) including a personal status sensor (611/612) for mounting on a human; a motion classification unit (602); an energy estimator unit (Figure 11– calories burned); and a filter (Column 7, lines 52 - 56). However Root et al. does not disclose specifically a Kalman filter. Foxlin teaches the use of a Kalman filter, which makes use of the statistical features of all of the signals, analyzes the raw sensor signals and then generate output signals that decrease the risk of error in the signal readings, and makes use of the compensating sensor signals even

during time periods when they are subject to accelerations. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the filter disclosed by Root et al. with a Kalman filter as taught by Foxlin et al for the reasons stated above.

6. Regarding claim 3, Root et al. discloses a human motion classification and measurement system that comprises of an alarm (Figure 11 & Column 2, lines 17 – 25) to indicate a traversal of a threshold.

7. Regarding claim 7, Root et al. discloses a personal status sensor (611/612); motion sensors (301/604); a motion classification unit (602); and an output unit (605). However, Root et al. does not address the motion sensors are specifically inertial sensors including gyroscopic sensors and accelerometers. However, Foxlin et al. discloses the motion sensors that are specifically inertial sensors, which included gyroscopic sensors and accelerometers. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use motion sensors that are specifically inertial sensors, which include gyroscopic sensors and accelerometers in order to enhance tracking of the positions and motion of a human body.

8. Claims 8, 10, 11, 12, 13, & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Root et al. as applied to claim 4 above, and further in view of Vock et al. US Patent No. 6,885,971 and Foxlin et al. US Patent No. 6,162,191.

9. In regards to claim 8, Root et al. disclose a human motion classification and measurement system, but does not disclose an altimeter or a magnetic sensor.

However, Vock et al. a reference in an analogous art discloses an altimeter for mounting on a human and having an output connected to said motion classification unit (Column 1, lines 20 – 25; Column 59, lines 14 – 16; & Claim 20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include an altimeter to sense the drop distance, as stated below: "Those skilled in the art should appreciate that an altimeter can also be placed in the watch...so that...the user is informed of drop distance." (Column 45 lines 3-5)

10. In regards to the magnetic sensor, as stated above Root et al. discloses a human motion and measurement system, but does not disclose the magnetic sensor. However, Foxlin et al. a reference in an analogous art discloses a magnetic sensor for mounting on the human and an output connected to said motion classification unit (Abstract; Figure 3, 112; Column 4, lines 9 - 11). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include magnetic sensors into the system to further track the orientation of a body to which it is mounted (Column 1, lines 51 – 67) and for the reason stated below: "Magnetic trackers are the most popular because of their convenience of operation (they don't even require line of sight)." (Column 1, lines 37 – 39)

11. In regards to claim 10, Root et al. in view of Foxlin et al. discloses an inertial navigation unit (306) connected to receive data from the inertial sensors and having a navigation state output. In regards the input preprocessing unit in claim 10, the motion classification unit disclosed by Root et al. in view of Foxlin et al. and Vock et al. (602) inherently has an input preprocessing unit having inputs connected to said global

positioning satellite sensor and said magnetic sensor and said altimeter and said motion classification unit and having an output.

12. Regarding claim 11, the input preprocessing unit and said filter are connected, thus there is inherently a measurement prefilter.

13. In regards to claim 12, an input preprocessing unit inherently has an initial input.

14. With regards to claim 13, the above sensors, which are adapted to mount onto a human, inherently has a human input to the input preprocessing unit.

15. With regards to claim 14, all of the components of the human motion classification and measurement system have been rejected for all for the reasons discussed previously.

16. Claims 18 & 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Root et al. in view of Teller et al. (US Publication No. 2002/0019586). Root discloses all of the elements mentioned in the previous office action. However, Root et al. does not disclose the personal status sensor including a respiration sensor and hydration sensor. Teller et al., however, discloses a personal status sensor (10) including a respiration ([0044]) and hydration sensor ([0044]). Since one aspect of Root's invention is to provide a device to monitor a user's vital signs in order to issue warnings based on measurements as compared to the built in limits (Column 2, lines 17-20), it would have been obvious to one having ordinary skill in the art at the time of the invention to include a respiration sensor and hydration sensor, as disclosed by Teller et al., in order to obtain a more comprehensive assessment of an individual's health.

New Ground(s) of Rejection – 35 USC § 102

17. Claims 4-6, 9, and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Root et al. (US 6,013,007, hereinafter Root).

18. Regarding claims 4-6 and 9, Root discloses a motion monitoring, motion measuring, motion classification system configured to wear and/or mount on a human (as best seen in Figures 1A, 1B, 6, 11, and 12), as broadly as *structurally* claimed, comprising:

- a personal status sensor (elements 101 and 601) including a heart rate sensor (element 611) (column 2 line 54 – column 3 line 13);
- motion sensors (global position system sensor, GPS, elements 301 and 604) in data communication (i.e. a digital input-output relationship as is well-known in the art) with a motion classification unit (element 602) that generates an output signal indicative of a motion type (e.g. the magnitude of velocity, speed, and/or direction of motion positively recited in column 7 lines 35-50) (column 2 lines 8-16 and Abstract);
- an output unit (elements 112, 202, 605 and 606) in data communication (i.e. a digital input-output relationship as is well-known in the art) with said personal status sensor and said motion classification unit via a processor (element 602) that provides an output indicative of activity and/or performance level (column 2 lines 16-29, column 2 line 54 – column 3 line 13, column 7 lines 41-67, and column 8 lines 33-46);

- an energy estimator unit (the displayable and/or audible performance measure of calories burned as seen in Figure 11) included in said output unit for providing an estimate of energy expended (column 7 lines 44-67 and column 8 lines 33-46);
- a health monitor unit (the displayable and/or audible performance measure of heart rate as seen in Figure 11) included in said output unit (column 7 lines 44-67 and column 8 lines 33-46) and operable to activate an alarm upon exceeding a physiological threshold (Figure 11 and column 2 lines 17 – 25); and
- a filter (column 7 lines 52 – 56 and the software of processor 602) in data communication (i.e. a digital input-output relationship as is well-known in the art) with said motion classification unit and said output unit.

19. Regarding claims 15-17, Root discloses a method of motion monitoring, motion measuring, motion classification via a system configured to wear and/or mount on a human (as best seen in Figures 1A, 1B, 6, 11, and 12), as broadly as claimed, comprising the steps of:

- sensing motion via motion sensors (elements 301 and 604) and classifying said sensed motion (e.g. the magnitude of the velocity, speed, and/or direction of motion positively recited in column 7 lines 35-50) (column 2 lines 8-16 and Abstract);
- sensing metabolic rate (the displayable and/or audible performance measure of calories burned as seen in Figure 11) and estimating energy expended from said sensed motion and said sensed metabolic rate (the displayable and/or audible performance measure of calories burned as seen in Figure 11);

- triggering an alarm if a physiological threshold is exceeded (Figure 11 and column 2 lines 17 – 25); and
- providing landmarking position (e.g. location) data via a GPS (Abstract).

New Ground(s) of Rejection - 35 USC § 103

20. Claims 1-3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Root in view of Foxlin et al. (US 6,162,191, hereinafter Foxlin) as broadly as claimed. Root discloses the claimed human motion measuring and motion classification system as set forth above except for explicitly disclosing (a) using a Kalman filter in data communication (i.e. a digital input-output relationship as is well-known in the art) with the personal status sensors, the motion classification unit, and the energy estimator unit for minimizing the statistical error of the data and (b) the motion sensors being inertial-type sensors including accelerometers and gyroscopic sensors. Foxlin teaches a human motion measuring and motion classification system, comprising: (a) using a Kalman filter (element 1327, abstract, column 4 lines 17-22 and column 13 line 55 – column 14 line 7) in data communication with personal status sensors (elements 1311 and 1312) and a motion classification unit (element 1326 that identifies/classifies the motion angle) for minimizing the statistical error of the data (column 20 line 59 – column 21 line 64) and (b) the motion sensors being inertial-type sensors including accelerometers (element 1311 of Figure 8 and column 6 lines 38-46) and gyroscopic sensors (element 1312 of Figure 8 column 6 lines 38-46). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the human motion measuring and motion classification system as taught by Root, with the

data filter and sensors as taught by Foxlin for the purpose of increasing the efficacy of a human motion measuring and motion classification system to accurately measure, monitor, and classify motion based on sensed and processed data.

21. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Root in view of Vock et al. (US 6,885,971 B2, hereinafter Vock) as broadly as claimed. Root discloses the claimed human motion measuring and motion classification system as set forth above except for explicitly disclosing the system comprising an altimeter and a magnetic sensor in data communication with the motion classification unit (however, Root does disclose measuring/ tracking changes in elevation and direction/heading in Figure 11, column 7 lines 35-40, and column 8 lines 47-51). Vock teaches a human motion measuring and motion classification system, comprising: an altimeter (element 14c) and a magnetic sensor (element 510) in data communication with a motion classification unit (element 12). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the human motion measuring and motion classification system as taught by Root, with the sensors as taught by Vock for the purpose of increasing the efficacy of a human motion measuring and motion classification system to accurately measure, monitor, and classify motion via a variety of interchangeable sensors.

22. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Root in view of Foxlin as applied to claims 1-3 and 7 above and in further view of Vock. Root in view of Foxlin discloses the claimed human motion measuring and motion classification system as set forth above including (a) an inertial navigation unit (Foxlin,

element 1326) in data communication with the inertial sensors providing an output and (b) an input preprocessing unit with an initial human model input that serves as a measurement prefilter (Root, the preprogrammed user data positively recited in column 6 line 63 – column 7 line 15 and seen Figure 10) in data communication (i.e. a digital input-output relationship as is well-known in the art) with the GPS sensor and the motion classification system. Root in view of Foxlin discloses the claimed human motion measuring and motion classification system as set forth above except for explicitly disclosing: (a) the system comprising an altimeter and a magnetic sensor in data communication with the motion classification unit (however, Root does disclose measuring/tracking changes in elevation and direction/heading in Figure 11, column 7 lines 35-40, and column 8 lines 47-51) and (b) the input preprocessing unit in data communication with a magnetic sensor and an altimeter. Vock teaches a human motion measuring and motion classification system, comprising: (a) a system comprising an altimeter (Vock, element 14c) and a magnetic sensor (Vock, element 510) in data communication with the motion classification unit (Vock, element 12) and (b) the input preprocessing unit (Vock, element 1004 and column 43 line 31 – column 44 line 29) in data communication with the magnetic sensor and the altimeter. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the human motion measuring and motion classification system as taught by Root in view of Foxlin, with the sensors and filters as taught by Vock for the purpose of increasing the efficacy of a human motion measuring and motion classification system to accurately measure, monitor, and classify motion based on sensed and processed

data.

23. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Root in view of Teller et al. (US 2002/0019586 A1, hereinafter Teller) as broadly as claimed. Root discloses the claimed human motion measuring and motion classification system as set forth above except for explicitly disclosing a respiration sensor and hydration sensor. Teller teaches a human motion measuring and motion classification system, comprising: a personal status sensor (element 10) comprising a respiration sensor (paragraph 44) and hydration sensor (paragraph 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the physiological monitoring system as taught by Root, with the sensors as taught by Teller for the purpose of increasing the efficacy of a human motion measuring and motion classification system to accurately measure physiological parameters.

24. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Root in view of Foxlin in view of Vock and in further view of Teller.

25. Root discloses the claimed human motion measuring and motion classification system as set forth above in the 102(b) rejection including an input preprocessing unit with an initial human model input that serves as a measurement prefilter (Root, the preprogrammed user data positively recited in column 6 line 63 – column 7 line 15 and seen Figure 10) in data communication (i.e. a digital input-output relationship as is well-known in the art) with the GPS sensor and the motion classification system. Root discloses the claimed human motion measuring and motion classification system as set forth above except for explicitly disclosing (a) the motion sensors being inertial-type

sensors including accelerometers and gyroscopic sensors and (b) an inertial navigation unit in data communication with the inertial sensors providing an output. Foxlin teaches a human motion measuring and motion classification system, comprising: the motion sensors being inertial-type sensors including accelerometers (Foxlin, element 1311 of Figure 8 and column 6 lines 38-46) and gyroscopic sensors (Foxlin, element 1312 of Figure 8 column 6 lines 38-46) and an inertial navigation unit (Foxlin, element 1326) in data communication with the inertial sensors providing an output. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the human motion measuring and motion classification system as taught by Root, with the data filter and sensors as taught by Foxlin for the purpose of increasing the efficacy of a human motion measuring and motion classification system to accurately measure, monitor, and classify motion based on sensed and processed data.

26. Root in view of Foxlin discloses the claimed human motion measuring and motion classification system as set forth above except for explicitly disclosing: (a) the system comprising an altimeter and a magnetic sensor in data communication with the motion classification unit (however, Root does disclose measuring/tracking changes in elevation and direction/heading in Figure 11, column 7 lines 35-40, and column 8 lines 47-51) and (b) the input preprocessing unit in data communication with a magnetic sensor and an altimeter. Vock teaches a human motion measuring and motion classification system, comprising: (a) a system comprising an altimeter (Vock, element 14c) and a magnetic sensor (Vock, element 510) in data communication with the motion classification unit (Vock, element 12) and (b) the input preprocessing unit (Vock,

element 1004 and column 43 line 31 – column 44 line 29) in data communication with the magnetic sensor and the altimeter. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the human motion measuring and motion classification system as taught by Root in view of Foxlin, with the sensors and filters as taught by Vock for the purpose of increasing the efficacy of a human motion measuring and motion classification system to accurately measure, monitor, and classify motion based on sensed and processed data gathered via a variety of interchangeable sensors.

27. Root in view of Foxlin in view of Vock discloses the claimed human motion measuring and motion classification system as set forth above except for explicitly disclosing a respiration sensor and hydration sensor. Teller teaches a human motion measuring and motion classification system, comprising: a personal status sensor (element 10) comprising a respiration sensor (paragraph 44) and hydration sensor (paragraph 44). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the physiological monitoring system as taught by Root in view of Foxlin in view of Vock, with the sensors as taught by Teller for the purpose of increasing the efficacy of a human motion measuring and motion classification system to accurately measure physiological parameters.

(10) Response to Argument

28. Applicant's arguments filed 09/12/2006 have been fully considered but they are not persuasive. Applicant argues the 102(b) rejection of claims 4-6, 9, and 15-17 under

Root does not anticipate the instant claims because Root does not disclose "a motion classification unit connected to receive data from said motion sensors and generate therefrom a motion type indicator signal" (Appeal Brief, page 13 last paragraph and page 15 3rd paragraph) and Root does not disclose "the sensing of metabolism rate of a human and estimating energy expended by the human from the classified motion and from the metabolism rate" (Appeal Brief, page 18 1st paragraph), specifically arguing speed is not a motion classification (Appeal Brief, page 14 1st paragraph).

29. The Examiner disagrees and maintains the rejection as set forth above. As *broadly* as claimed, Root discloses sensing motion (for example: speed) and classifying the motion (for example: the magnitude of the speed), generating a motion type indicator signal indicative of the classified motion, sensing a metabolic rate, and estimating expended energy (as stated above). Moreover, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., motion types: standing, walking, running, etc... Appeal brief, page 13 2nd paragraph) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

30. Applicant's arguments with respect to claims 1-3, 7-8, 10-14, and 18-19 have been considered but are moot in view of the new ground(s) of rejection.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Conclusion

This examiner's answer contains a new ground of rejection set forth in section **(9)** above. Accordingly, appellant must within **TWO MONTHS** from the date of this answer exercise one of the following two options to avoid *sua sponte* **dismissal of the appeal** as to the claims subject to the new ground of rejection:

(1) **Reopen prosecution.** Request that prosecution be reopened before the primary examiner by filing a reply under 37 CFR 1.111 with or without amendment, affidavit or other evidence. Any amendment, affidavit or other evidence must be relevant to the new grounds of rejection. A request that complies with 37 CFR 41.39(b)(1) will be entered and considered. Any request that prosecution be reopened will be treated as a request to withdraw the appeal.

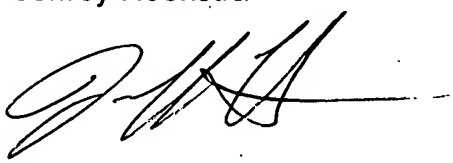
(2) **Maintain appeal.** Request that the appeal be maintained by filing a reply brief as set forth in 37 CFR 41.41. Such a reply brief must address each new ground of rejection as set forth in 37 CFR 41.37(c)(1)(vii) and should be in compliance with the other requirements of 37 CFR 41.37(c). If a reply brief filed pursuant to 37 CFR 41.39(b)(2) is accompanied by any amendment, affidavit or other evidence, it shall be

treated as a request that prosecution be reopened before the primary examiner under 37 CFR 41.39(b)(1).

Extensions of time under 37 CFR 1.136(a) are not applicable to the TWO MONTH time period set forth above. See 37 CFR 1.136(b) for extensions of time to reply for patent applications and 37 CFR 1.550(c) for extensions of time to reply for ex parte reexamination proceedings.

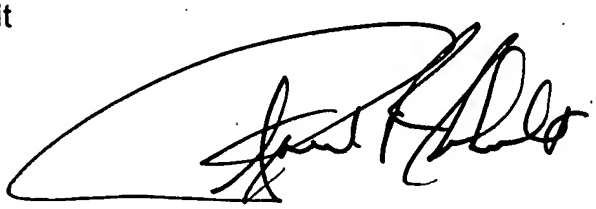
Respectfully submitted,

Jeffrey Hoekstra



A Technology Center Director or designee must personally approve the new ground(s) of rejection set forth in section (9) above by signing below:

Frederick Schmidt



Conferees:

FREDERICK R. SCHMIDT
DIRECTOR
TECHNOLOGY CENTER 3700

Max Hindenburg

Angela Sykes